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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/686,780	10/10/2000	James T. Klosowski	YOR920000688US1	4874

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05/04/2004

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EXAMINER

THANGAVELU, KANDASAMY

ART UNIT

PAPER NUMBER

2123

DATE MAILED: 05/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

14

Office Action Summary

Application No.

09/686,780

Applicant(s)

KLOSOWSKI ET AL.

Examiner

Kandasamy Thangavelu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 October 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 October 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-6 of the application have been examined.

Information Disclosure Statement

2. Acknowledgment is made of the information disclosure statements filed on October 10, 2000 together with copies of the patents and papers. The patents and papers have been considered in reviewing the claims.

Drawings

3. The drawings are objected to; see a copy of Form PTO-948 for an explanation.

Specification

4. The disclosure is objected to because of the following informalities:

The reference to related applications on Page 17 of the application should appear as the first paragraph on Page 1 of the application with the heading "RELATED APPLICATIONS". Since the applications have been issued as patents, both the application numbers and the patent numbers should be included with the title and inventors. The wording "Alternative uses and methods of simplifying the results of this

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invention are disclosed and claimed in" appears to be incorrect, on careful review of the related patents. Therefore, it is recommended that this wording be changed to: "This application is also related to U.S. patent application number ..., entitled ... to Horn et al., now issued as U.S. patent ...".

Appropriate corrections are required.

Claim Objections

5. The following is a quotation of 37 C.F.R § 1.75 (d)(1):

The claim or claims must conform to the invention as set forth in the remainder of the specification and terms and phrases in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description.

6. Claim 2 is objected to because of the following informalities:

Claim 2, Lines 1-3, "A method, as in claim 1, where the projected vertices and the midpoint of the annotation edge are collinear and the plane is defined by containing the two projected vertices and a normal to the surface of the model at one or more of the projected vertices" appears to be incorrect and it appears that it should be "A method, as in claim 1, where the projected vertices and the midpoint of the annotation edge are collinear, the plane is defined by containing the two projected vertices and a normal to the surface of the model at one or more of the projected vertices".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. §112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 1-6 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 1 states, "A method for annotating a surface of a computer model, comprising the steps of:

projecting two or more annotation vertices, being projected vertices, of an annotation onto the surface of the model, the annotation having annotation edges that connect pairs of the annotation vertices;" ...

However, the specification describes only the method for annotating a surface of a computer model when the annotations comprise line segments that are draped on the surface of the model (Page 8, Line 16) and the annotations can be specified as geometry, in the form of a set of vertices and edges (Page 10, Lines 2-3). Thus the method claimed cannot be applied when

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the annotations are text, color and its intensity applied to the surface of the geometric model or fill pattern applied to the surface. Claim 1 should include this limitation.

Claim 5 states, "A computer system that annotates a surface of a computer model, comprising:

means for projecting two or more annotation vertices, being projected vertices, of an annotation onto the surface of the model, the annotation having annotation edges that connect pairs of the annotation vertices;" ...

Claim 6 states, "A computer product having a program comprising the steps of:
projecting two or more annotation vertices, being projected vertices, of an annotation onto the surface of the model, the annotation having annotation edges that connect pairs of the annotation vertices;" ...

However, the specification describes only the means and computer program for annotating a surface of a computer model when the annotations comprise line segments that are draped on the surface of the model (Page 8, Line 16) and the annotations can be specified as geometry, in the form of a set of vertices and edges (Page 10, Lines 2-3). Thus the method claimed cannot be applied when the annotations are text, color and its intensity applied to the surface of the geometric model or fill pattern applied to the surface. Claims 5 and 6 should include this limitation.

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9. The applicant would be able to overcome the 112 First Paragraph rejection, by rewriting the independent claims as follows:

Claim 1: A method for annotating a surface of a computer model, wherein the annotations comprise line segments and are specified as geometry in the form of a set of vertices and edges, comprising the steps of:

projecting two or more annotation vertices, being projected vertices, of an annotation onto the surface of the model, the annotation having annotation edges that connect pairs of the annotation vertices; ...

Claim 5: A computer system that annotates a surface of a computer model, wherein the annotations comprise line segments and are specified as geometry in the form of a set of vertices and edges, comprising:

means for projecting two or more annotation vertices, being projected vertices, of an annotation onto the surface of the model, the annotation having annotation edges that connect pairs of the annotation vertices; ...

Claim 6: A computer product having a program for annotating a surface of a computer model, wherein the annotations comprise line segments and are specified as geometry in the form of a set of vertices and edges, comprising the steps of:

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projecting two or more annotation vertices, being projected vertices, of an annotation onto the surface of the model, the annotation having annotation edges that connect pairs of the annotation vertices;

Claim Rejections - 35 USC § 101

10. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

11. Claims 1-6 are rejected under 35 U.S.C. 101 because the claimed inventions are directed to non-statutory subject matter.

Method claims 1-4 are rejected for reciting a process that is not directed to the technological arts.

Regarding claim 1, this claim is directed at a method for annotating a surface of a computer model, whereas none of the limitations describe any type of computer-implemented steps. To be statutory, the utility of an invention must be within the technological arts. *In re Musgrave*, 167 USPQ 280, 289-90 (CCPA, 1970). The definition of “technology” is the “application of science and engineering to the development of machines and procedures in order to enhance or improve human conditions, or at least to improve human efficiency in some respect.” (Computer Dictionary 384 (Microsoft Press, 2d ed. 1994)).

Dependent claims 2-4 depend on Claim 1 but do not add further statutory steps.

The limitations recited in claims 1-4 contain no language suggesting these claims are

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intended to be within the technological arts.

Independent claim 5 recites a computer system that annotates a surface of a computer model. The limitations recited in claim contain means for language suggesting only software components which are not statutory subject matter. To be statutory, the system should include computer system hardware components which will be required to implement the software components.

Independent claim 6 recites a computer product having a program. The limitations recited in claim contain the steps implemented in the computer program which is not statutory subject matter. To be statutory, the computer product should include a program comprising instructions which when executed in a computer performs a process comprising the steps included in the limitations.

12. Claim 1- 4 would be statutory if they are written as a computer implemented method for annotating a surface of a computer model.

Claim 5 would be statutory if it is rewritten as:

A computer system that annotates a surface of a computer model, comprising:

a processor to execute a program of instructions stored in the memory of the computer;

a memory to store a program of instruction for performing a method for annotating a

surface of a computer model and the data defining the geometric model;

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a graphics processor and a display to display an image of the computer model and the annotation;

means for projecting two or more annotation vertices, being projected vertices, of an annotation onto the surface of the model, the annotation having annotation edges that connect pairs of the annotation vertices;

.....

Claim 6 would be statutory if it is rewritten as:

A computer product having a program comprising instructions which when executed on a computer perform a process for annotating a surface of a computer model, the process comprising the steps of:

projecting two or more annotation vertices, being projected vertices, of an annotation onto the surface of the model, the annotation having annotation edges that connect pairs of the annotation vertices;

....

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

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14. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

15. Claims 1, 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Rose et al. (RO)** ("Annotating real-world objects using augmented reality", European computer industry research center, Geramny, June 1995) in view of **Karaski et al. (KA)** (U.S. Patent 6,260,000), and further in view of **Kung et al. (KU)** (U.S. Patent 6,633,290).

15.1 As per claim 5, **RO** teaches annotating real-world objects using augmented reality. Specifically, as per claim 5, **RO** teaches a computer system that annotates a surface of a computer model (Page 4, Fig 3.1; Page 3, Para 3 to Page 5, Para 1; Abstract).

RO states: a system for annotating real-world objects using augmented reality. A virtual form (model) of a real-world object is matched to the real object, allowing one to visually annotate the real components with information from the corresponding model. Augmented reality provides a natural method for presenting the "enhancing" computer-based information by merging graphics with a view of the real object. User queries on the real object can be translated into queries on the model, producing feedback that can augment the user's view of the real world. (Abstract)

RO does not expressly teach means for projecting two or more annotation vertices, being projected vertices, of an annotation onto the surface of the model, the annotation having annotation edges that connect pairs of the annotation vertices. **KA** teaches means for projecting

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two or more annotation vertices, being projected vertices, of an annotation onto the surface of the model, the annotation having annotation edges that connect pairs of the annotation vertices (CL24, L53-59; CL25, L10-14; CL25, L35-40), as that would allow calculating the length of a path including points on the surface of a three-dimensional shape (CL3, L23-26).

KA states: projecting points "p"s, which are on a standard plate "H" corresponding to the pixels in a Canvas, on the solid model "X" in the Z-axis direction as shown in FIG. 37a. (CL24, L53-59); the points that are on the standard plate and correspond to the pixels in a Canvas are projected on the solid model in the Z-axis direction, and the coordinates of the points projected on the surface of the solid model are calculated (CL25, L10-14); points on the surface of the solid model are obtained by projecting the points that are on the standard plate and correspond to the pixels in a Canvas on the solid model (CL25, L35-40).

It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **RO** with the system of **KA** that included means for projecting two or more annotation vertices, being projected vertices, of an annotation onto the surface of the model, the annotation having annotation edges that connect pairs of the annotation vertices. The artisan would be motivated because that would allow calculating the length of a path including points on the surface of a three-dimensional shape.

RO does not expressly teach means for selecting a plane between a pair of the projected vertices, the plane being defined as containing the pair of the projected vertices and a midpoint of the annotation edge that connects the pair of the annotation vertices. **KA** teaches means for selecting a plane between a pair of the projected vertices, the plane being defined as containing the pair of the projected vertices and a midpoint of the annotation edge that connects the pair of the annotation vertices (CL3, L52-56; CL3, L67 to CL4, L3), as that would allow calculating the

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length of a path including points on the surface of a three-dimensional shape (CL3, L23-26; CL3, L43-45).

KA states: a first length obtaining section for obtaining each first length that is a length between two adjacent points of three points in one of the groups along a line of intersection of a plane including the three points and the surface of the three-dimensional shape for each of the groups (CL3, L52-56); two points of which are included in another group of three points along the line of intersection of the plane designated by three points in the group and the surface of the three-dimensional shape (CL3, L67 to CL4, L3).

It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **RO** with the system of **KA** that included means for selecting a plane between a pair of the projected vertices, the plane being defined as containing the pair of the projected vertices and a midpoint of the annotation edge that connects the pair of the annotation vertices. The artisan would be motivated because that would allow calculating the length of a path including points on the surface of a three-dimensional shape.

RO does not expressly teach means for cutting the surface of the model with the plane, the plane intersecting the model on a cutting line; and means for reconnecting the projected vertices on the surface of the model along the cutting line to produce the projection of the respective annotation edges on the model. **KU** teaches means for cutting the surface of the model with the plane, the plane intersecting the model on a cutting line; and means for reconnecting the projected vertices on the surface of the model along the cutting line to produce the projection of the respective annotation edges on the model (Abstract, L3-10; CL2, L7-24), as that would allow creating 2D views of the 3D point data in particular projections as used in architecture, engineering and construction since 2D views are relatively straight forward to create from 3D point data (CL1, L49-55).

KU states: An apparatus and method are described for forming 2D views of a structure from 3D point data. In the present invention, a plane is specified and triangulated meshes are intersected with the plane to form a group of polylines. The significant features of each polyline are then extracted, and the features are then connected to form intersection polylines that closely approximate the intersection polylines that would be generated by intersecting the real 3D structure with the specified plane. The final 2D view consists of the connected features extracted from the polylines. (Abstract)

It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **RO** with the system of **KU** that included means for cutting the surface of the model with the plane, the plane intersecting the model on a cutting line; and means for reconnecting the projected vertices on the surface of the model along the cutting line to produce the projection of the respective annotation edges on the model. The artisan would be motivated because that would allow creating 2D views of the 3D point data in particular projections as used in architecture, engineering and construction since 2D views would be relatively straight forward to create from 3D point data.

15.2 As per Claims 1 and 6, these are rejected based on the same reasoning as Claim 5, supra. Claims 1 and 6 are method and computer product claims reciting the same limitations as Claim 5, as taught throughout by **RO**, **KA** and **KU**.

15.3 As per Claim 3, **RO** does not expressly teach that the projected vertices are projected on the surface within a tolerance by snapping. **KU** teaches that the projected vertices are projected on the surface within a tolerance by snapping (CL5, L35-42), as that would provide a collection of points that are close together to form a collection of polylines with nonintersecting segments

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(CL5, L38-42). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **RO** with the method of **KU** that included the projected vertices being projected on the surface within a tolerance by snapping. The artisan would be motivated because that would provide a collection of points close together to form a collection of polylines with nonintersecting segments.

15.4 As per Claim 4, **RO** does not expressly teach that the reconnection process is a "surface walk". **KU** teaches that the reconnection process is a "surface walk" (CL5, L35-42), because as per **KA**, that would allow calculating the length of a path including points on the surface of a three-dimensional shape (CL3, L23-26). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **RO** with the method of **KU** that included the reconnection process being a "surface walk". The artisan would be motivated because that would allow calculating the length of a path including points on the surface of a three-dimensional shape.

16. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Rose et al. (RO)** ("Annotating real-world objects using augmented reality", European computer industry research center, Geramny, June 1995) in view of **Karaski et al. (KA)** (U.S. Patent 6,260,000), and further in view of **Kung et al. (KU)** (U.S. Patent 6,633,290) and **Baker et al. (BA)** (U.S. Patent 5,363,475).

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16.1 As per Claim 2, **RO**, **KA** and **KU** teach the method of claim 1. **RO** does not expressly teach that where the projected vertices and the midpoint of the annotation edge are collinear the plane is defined by containing the two projected vertices and a normal to the surface of the model at one or more of the projected vertices. **BA** teaches that where the projected vertices and the midpoint of the annotation edge are collinear the plane is defined by containing the two projected vertices and a normal to the surface of the model at one or more of the projected vertices (CL2, L1-5), because the entire 3D surface could be defined using polygons having defined vertices and a defined surface normal drawn perpendicular to the plane of the polygon from one vertex (CL2, L1-5). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **RO** with the method of **BA** that included that where the projected vertices and the midpoint of the annotation edge were collinear the plane was defined by containing the two projected vertices and a normal to the surface of the model at one or more of the projected vertices. The artisan would be motivated because the entire 3D surface could be defined using polygons having defined vertices and a defined surface normal drawn perpendicular to the plane of the polygon from one vertex.

Conclusion

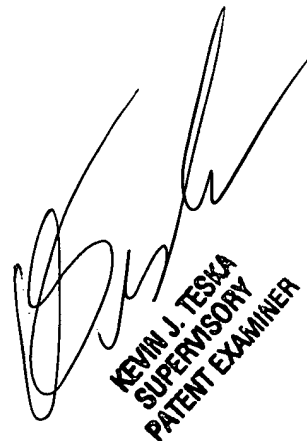
17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is 703-305-0043. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

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If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska, can be reached on (703) 305-9704. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-9600.

K. Thangavelu
Art Unit 2123
April 8, 2004



KEVIN J. TESKA
SUPERVISORY
PATENT EXAMINER